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BICSI Outside Plant Designer (OSP)

BICSI OSP-002

Version Demo

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Topic Break Down

Topic	No. of Questions
Topic 1, Project Management	3
Topic 2, Design	88
Topic 3, Construction	33
Topic 4, Safety	1
Total	125

QUESTION NO: 1

A campus owner is selecting the fiber count for a new feeder cable between two buildings. Which two inputs are most important when determining the required fiber count? (Choose two.)

A. Current service requirements

B. Projected growth and spare-fiber requirements

C. Selected cable jacket color

D. Available conduit diameter

E. Number of maintenance technicians

ANSWER: A B

Explanation:

The required fiber count must account for **current service requirements** and **projected future growth, including spare fibers**. The designer should allocate fibers for the services planned at installation and provide reasonable capacity for expansion, restoration, and operational flexibility. Cable jacket color and conduit diameter may affect installation or administration decisions, but they do not establish the number of fibers required. The number of technicians expected to maintain the route is also not a fiber-count design input.

QUESTION NO: 2

A hand hole is being selected as an access point for an underground communications pathway located beside a vehicular roadway. Which two characteristics are most important to include in the design? (Choose two.)

A. A load rating suitable for anticipated vehicle exposure

B. A size and access opening suitable for planned cable work

C. A cover color matching the adjacent pavement

D. A permanently sealed cover with no maintenance access

E. A structure sized only for the initial cable diameter

ANSWER: A B

Explanation:

The hand hole must have a **load rating suitable for the installed location** and must provide **adequate access for the planned cable pulling, maintenance, and future work**. A structure beside or within an area exposed to vehicles must withstand the applicable loading conditions. Its dimensions, conduit entries, and access opening must also support safe installation and maintenance activities. Selecting the structure by cover color or requiring it to be permanently sealed against all access would not meet its operational purpose.

QUESTION NO: 3

An underground communications conduit enters a building through a below-grade wall into an entrance facility. Which two measures should be included to address building-entry protection? (Choose two.)

A. Seal the conduit to limit water and gas migration

B. Use an approved firestopping system where a rated assembly is penetrated

C. Fill the penetration with ordinary expanding foam only

D. Terminate a spare communications conduit at an electrical panel

E. Leave metallic cable components unbonded at the entrance

ANSWER: A B

Explanation:

The conduit entry should be **sealed to limit water and gas migration**, and penetrations through a fire-rated assembly should use an **approved firestopping system compatible with the penetration**. Underground conduits can provide a path for moisture and gases into a building, while penetrations through rated barriers must preserve the intended fire-resistance performance. Ordinary expanding foam is not a substitute for a specified firestop system. A spare communications conduit should not be routed to an electrical panel, and metallic cable components require appropriate bonding considerations rather than being left unbonded.

QUESTION NO: 4

Smaller buildings with a serving area larger than 1000 ft2 and less than 5000 ft2 may be served by:

A. self-contained cabinets.

B. wall cabinets.

C. shallow rooms.

D. enclosed cabinets.

ANSWER: C

Explanation:

shallow rooms. is correct. In a small-building telecommunications-space design, the size of the area served helps determine whether a cabinet or a dedicated telecommunications room is appropriate. For a serving area greater than 1,000 ft² (approximately 93 m²) but below 5,000 ft² (approximately 465 m²), a shallow telecommunications room provides a practical, standards-aligned solution. It supplies a defined and secure location for telecommunications terminations, active equipment, pathways, grounding and bonding, power, environmental considerations, and technician access, without requiring the footprint of a full-size room used for larger serving areas.

This approach supports scalable outside-plant and in-building distribution design: the space is sufficient to accommodate the required infrastructure and maintenance clearances while remaining proportionate to the relatively limited area being served. The designer should still coordinate the room's final dimensions, access, fire protection, power, grounding, HVAC, and pathway entries with the applicable telecommunications-space and building requirements. BICSI standards and publications provide the design framework for telecommunications infrastructure, while the TIA pathway-and-space standard is a key companion reference for these space-planning decisions. See BICSI Standards and TIA Standards.

QUESTION NO: 5

A designer is preparing a direct-buried nonmetallic fiber route through an area subject to future landscaping work. Which two measures will best help prevent accidental damage and support future route identification? (Choose two.)

A. Install detectable warning tape above the cable

B. Install a tracer wire with the cable

C. Leave a pull rope beside the cable

D. Install each splice closure above grade

E. Rely on contractor installation records only

ANSWER: A B

Explanation:

Detectable warning tape and a **tracer wire** provide complementary protection for a direct-buried nonmetallic cable. Warning tape gives excavators a visible indication of a buried facility before they reach the cable, while the tracer wire permits the route to be located electronically. A pull rope is useful in conduit, not in a direct-buried installation, and neither an above-ground splice closure nor omission of route records provides suitable buried-route protection.

QUESTION NO: 6

Attenuation in copper cable_____.

A. Is lower at higher frequencies

B. Is higher at higher frequencies

C. Is the same at all frequencies

D. Is highest at 10 MHz

ANSWER: B

Explanation:

“Is higher at higher frequencies” is correct. In balanced copper cabling, attenuation (commonly measured as insertion loss in decibels over a specified channel or permanent-link length) increases as signal frequency increases. This frequency-dependent loss results principally from conductor resistance effects, including skin effect, along with dielectric losses in the cable insulation. At higher frequencies, current is concentrated closer to the conductor surface, raising effective resistance and therefore signal loss. Cable standards consequently specify insertion-loss limits across a range of frequencies, with the permitted loss expressed as a frequency-dependent value rather than a single value applicable at every frequency. This behavior is fundamental to outside-plant and premises copper design: the cable type, conductor size, run length, and operating frequency must be evaluated together to ensure sufficient received signal level and system margin. BICSI’s standards and publications address the design and installation practices used to manage transmission performance in telecommunications cabling systems; see the BICSI Standards resource. The frequency-dependent nature of copper insertion loss is also reflected in structured-cabling measurement guidance from Fluke Networks.

QUESTION NO: 7

An ICT distribution designer is coordinating with local agencies for an upcoming campus improvement project which could affect the design. Which two of the following listed items will MINIMIZE design changes once the project begins? (Choose two.)

A. Identification and agreement of conduit pathway routes

B. Hand off of documentation to project manager

C. Identification of maintenance holes, hand holes locations

D. Approval of budget by chief financial officer (CFO)

E. Approval of permit by AHJ - local Fire Marshal

ANSWER: A C

Explanation:

Identification and agreement of conduit pathway routes and **Identification of maintenance holes, hand holes locations** are the actions that most directly minimize redesign after campus work starts. Early agreement on the underground pathway establishes where communications conduits can be installed in relation to roads, buildings, utilities,

easements, drainage features, and planned construction. It gives the designer a coordinated route that can be reflected in drawings, quantities, constructability reviews, and agency discussions before field conditions create costly conflicts.

Similarly, identifying the locations of maintenance holes and hand holes early establishes the access-point layout for pulling, splicing, testing, maintenance, and future cable work. These structures must be coordinated with the selected conduit routes, utility congestion, grade, drainage, traffic/loading conditions, and access requirements. Confirming both the route and access-structure locations provides a coherent outside-plant pathway system and allows conflicts to be resolved during planning rather than through change orders or field redesign.

This approach is consistent with BICSI's outside-plant design focus on coordinated pathway and space planning, as described in BICSI Standards, and with early utility-location coordination practices outlined by the Federal Highway Administration.

QUESTION NO: 8

What kinds of connection to the cable does a UTP jack typically have?

A. 66 punchdown

B. 110 punchdown

C. Snap-in contacts

D. Solder connections

ANSWER: B

Explanation:

110 punchdown is the typical cable-termination method for a UTP telecommunications jack. The rear of a balanced twisted-pair jack contains color-coded insulation-displacement contact (IDC) slots arranged for the applicable wiring scheme, such as T568A or T568B. During termination, each conductor is seated into its assigned slot with a compatible punchdown tool. The IDC contact displaces the conductor insulation and makes a reliable metal-to-metal electrical connection without stripping the individual conductor first. This construction also helps the installer keep pair untwist to a minimum at the point of termination, an important practice for preserving the cabling channel's transmission performance. In outside-plant-related projects, this same structured-cabling termination method is commonly encountered wherever the OSP pathway transitions to entrance facilities, telecommunications rooms, or work-area horizontal cabling. The 110-style IDC interface is therefore the standard practical identification for how a UTP jack connects to the cable. BICSI's standards resources provide the framework for structured-cabling installation and performance practices: BICSI Standards. Manufacturer documentation also identifies modern category-rated jacks as IDC-terminated components: Panduit Keystone Jacks.

QUESTION NO: 9

Where would an ICT distribution designer working for a company responding to a RFP expect to find requirements concerning alternative dispute resolution in the scope of work (SOW)?

A. It would be expected in the portion of the scope of work (SOW) containing technical considerations.

B. It would not be expected in the scope of work (SOW).

C. It would be expected in the section of the scope of work (SOW) containing legal requirements.

D. It would be expected in the part of the scope of work (SOW) delineating acceptance requirements.

ANSWER: B

Explanation:

"It would not be expected in the scope of work (SOW)." is correct because a scope of work defines the work the contractor must perform and the resulting technical, functional, delivery, and acceptance-oriented requirements. Its purpose is to give offerors a clear, measurable description of the required services, products, performance outcomes, and constraints so they

can develop a responsive technical approach and price. Alternative dispute resolution, by contrast, concerns the process used to resolve disagreements arising during contract administration or performance. That is a contractual, procurement, or legal administration matter rather than a requirement describing the work itself. It would therefore normally appear in the solicitation's terms and conditions, contract clauses, procurement instructions, or other legal provisions associated with the agreement—not in the SOW. This separation is important to an ICT distribution designer: the designer uses the SOW to establish the engineering and deliverable baseline, while dispute-resolution provisions govern the parties' rights and procedures if a disagreement occurs. The U.S. Federal Acquisition Regulation addresses ADR as an agency contract-dispute practice in FAR 33.214, and GSA describes a statement of work as the document defining the required work and performance expectations in its Statement of Work guidance.

QUESTION NO: 10

A customer-owned aerial fiber route requires an additional cable attachment. A field survey confirms that ground clearances remain adequate, but no current information is available regarding pole loading or existing attachment forces. What should the designer do first?

A. Install additional guying at each pole.

B. Obtain a pole-loading and joint-use review for the proposed attachment.

C. Replace all poles with a higher pole class.

D. Increase the attachment height to create additional separation.

ANSWER: B

Explanation:

The designer should obtain or perform the applicable pole-loading and joint-use review before approving the new attachment. Adequate ground clearance is essential, but it does not establish that the pole, attachments, and guys can support the added loading under the governing conditions. The review considers the pole condition, existing attachments, span geometry, cable loading, guying, and owner requirements. Adding guying or selecting a smaller cable before the analysis may be unnecessary or may fail to resolve the actual structural limitation.

QUESTION NO: 11

Multiple Response: Identify one or more choices that best complete the statement or answer the question.

The bandwidth and distance capability of optical fiber means that _____. (choose all that apply)

A. Fewer cables are needed

B. Fewer repeaters are needed

C. Less power is consumed by the network

D. Less maintenance is required

ANSWER: A B C D

Explanation:

Optical fiber's combination of very high information-carrying capacity and low attenuation supports all of these network benefits. **Fewer cables are needed** because a single fiber or fiber pair can carry extremely large aggregate traffic volumes, including many channels or wavelengths, that would otherwise require numerous lower-capacity copper circuits. **Fewer repeaters are needed** because fiber signals can travel much farther before regeneration or amplification is necessary. Reducing the number of intermediate active sites also means **less power is consumed by the network**: repeaters, regenerators, and associated environmental support equipment require electrical power. Finally, **less maintenance is required** because there are fewer active field devices and fewer intermediate locations that must be powered, monitored, inspected, and serviced. These operational advantages are especially important in outside-plant designs, where remote

active equipment locations can add substantial lifecycle cost and logistical complexity. The Fiber Optic Association discusses fiber's low loss, long-distance transmission capability, and high bandwidth in its Fiber Optic Reference Guide. Additional practical background on the performance and application of optical-fiber communication systems is available from NIST.

QUESTION NO: 12

The standard method of testing installed multimode cables in a cable plant is described in:

A. FOTP-34

B. ISO 11801

C. FOTP-57

D. OFSTP-14

ANSWER: D

Explanation:

OFSTP-14 is the established designation for the standard method covering optical power-loss measurements on an installed multimode fiber cable plant. This field-test method defines the practical measurement approach used for acceptance and troubleshooting, including use of an optical light source and power meter, appropriate reference-setting methods, test-cord considerations, and reporting of measured insertion loss. These procedures enable measured link loss to be compared consistently with the applicable loss budget and cabling-performance requirements. In current TIA nomenclature, this subject is maintained under the ANSI/TIA-526-14 series; therefore, older BICSI and industry references that cite OFSTP-14 point to the multimode installed-cable-plant testing method rather than a general cabling-system standard. Correct application requires compatible multimode test equipment, wavelengths appropriate to the fiber system, and controlled launch/reference conditions so the measurement represents installed-link performance. TIA publishes and maintains telecommunications standards information at TIA Standards. Additional industry guidance on optical power-meter and light-source testing is available from the Fiber Optic Association.